

Paper March 10th

1824

W. E. H.

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On
Cinchona

in

Intermittent Fever

by

George A. Eckert

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Pennsylvania. 1823.

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Cinchona

Before entering upon the consideration of Cinchona as a remedial article, in intermittent fever, I propose, briefly, to give a sketch of its natural history, and of the mode of introduction into regular practice.

The tree, which affords this invaluable article of the materia medica, is a native of Peru. Notwithstanding the diligent researches of botanists, the history of this important genus seems yet to be involved in some considerable perplexity. Not less than about thirty different species have been described by authors. Though the different varieties of bark which now occur in commerce, are chiefly ascertained into three kinds, viz: the pale - the red - and the yellow. - & in technical language, Cinchona lancifolia - oblongifolia - and cordifolia.

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The knowledge of the properties of bark, was originally acquired by accident. An Indian being seized with a violent paroxysm of fever, and finding no other water to quench his thirst, was forced to drink out of a pool, strongly impregnated with the bark from some trees having fallen into it, by which he was cured. This is the mode of its introduction into the modern medicine, very curious. It is related, that the lady of the viceroys of Peru, whose name was Cincho, was affected with a tertian intermittent of a very intractable nature. She was advised by the governor of Lima, who had been made acquainted with the febrifuge powers of the bark, to use it as a remedy in her disease. She took it, and was soon relieved. The event of this case diffused its fame throughout Spain, where it came into general use. To commemorate this incident, Linnæus, in a spirit of gallantry, conferred the title of Cinchona on the medicine.

About the year 1649 the bark was carried to Italy by the Jesuits, where it was gratuitously distributed among the indigent sick at Rome, by Cardinal de Lugo and his physician, Sebastian Baldo, to the latter of whom is due the credit of

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having written the first work on this valuable article. Its fame
now rapidly extended throughout France, Germany, England
&c; and although opposed on all sides, the value of its
powers was finally established by the testimony of universal
experience.

A variety of prejudices respecting the bark prevailed for
a long time after its introduction into Europe, the most ancient
of which do not even deserve to be noticed; such as, that those
who use the medicine, will die within a year; or, according
to others, in seven years; that it was particularly pernicious
to fat persons; that it strikes into the bones; and that it
is often followed by obstructions of the viscera, &c. &c.
Happily such fantastic and ill-founded objections no longer
invalidate the merits of the article, at least in medical
opinion. Yet this preposterous notion is cherished even at
the present day, by the vulgar of some parts of our country,
so that it materially interferes with the proper adminis-
tration of the medicine. Cases of this description have come
under my own observation.

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Bark, as already observed, was originally employed in the cure of intermittent fever, a disease, in which, it had maintained an unrivalled reputation. At one time it was even considered a specific in this disease, and to adduce any additional, ^{and unnecessary} of its superior efficacy, would now, indeed, be altogether superfluous.

Notwithstanding all practitioners are agreed as to the utility of the medicine, in agreed, still that unanimity of sentiment is not perfect, as respects the period of the disease at which it ought to be exhibited; — the proper form of its administration; — and the utility, or inutility, of a previous resort to evacuant remedies. — To determine, when, and in what manner the bark should be given, and also the necessity of pre-mixing evacuants, I will, for the sake of perspicuity, divide the consideration of the subject into the following heads, and treat of these, in their proper order.

1. — The period of the disease proper for its administration.
2. — The nature of the symptoms, with the age and

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4— The form of administering the bark.

To avoid repetition, I will not confine the consideration for aunts under any particular division.

First.— The period of the disease proper for its administration. — As before observed, considerable diversity of opinion has been expressed upon this subject. Sydenham gave it at long intervals, and in doses, too insignificant to expect much of its antifebrile powers. He made an electary of bark, camomile, and syrup of rose, two ounces, of which the dose of a nutmeg was a dose, repeated morning & night, on the intermedium, or well days, until the whole was taken. The same quantity was repeated thrice, interposing a fortnight between each. Heberden gave as much as four ounces immediately before the accession of the paroxysm; and Dr Clark, Balfour and others, recommended it during the hot stage. It is also stated that among the early notions on this point

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was the absurd one, that, in an intermittent, some time should be allowed to elapse, before the bark was exhibited, in order that morbid matter may be thrown off by the paroxysms. While such paradoxical rules as these regulated the administration of the bark, we cannot be surprised that it was not found very successful.

The proper time to exhibit the bark, is undoubtedly during the apyrexia or intermission; and upon this point, practitioners are now, I believe, unanimously agreed. But there exists some discrepancy as to the particular period of this apyrexia, at which it should be given in the largest quantity. Cullen is decidedly in favour of giving it in pretty large doses just before the accession of the paroxysm; and C. Herbert, on the other hand, asserts, that the bark should be given at as great an interval of time as possible from the next expected paroxysm. Dr A. Philips Wilson, in his excellent work on febrile diseases, observes, "When the apyrexia is short and the quantity of the bark required considerable, it must be given immediately after the paroxysm, and continued till

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the return of the succeeding fit, at longer or shorter intervals, as the case is more or less urgent, and the stomach able to bear it.

On the other hand, when the dyscrasia is long, especially when a great quantity of bark is not necessary, its exhibition should be delayed till within six or eight hours of the time at which the paroxysm is expected. Then, a considerable quantity given at that period is more likely to succeed; than the same quantity in smaller doses, throughout the whole of a long dyscrasia. In the cure of intermittents, "Cottunus h." this medicine acts chiefly on the stomach and bowels, and that on this account our endeavors should be directed; to have a proper quantity of bark in the primæ, viz, at the time the paroxysm is expected.

As, to prevent the recurrence of the paroxysms, is our great object, it is manifest, that we should begin the administration of the bark (provided no contra-indications are present) at a period sufficiently antecedent, to insure us, that the system will be fully under its impression at the time the fit is anticipated. The early exhibition of the bark in the dyscrasia, is the more essentially necessary, when we consider its operation

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on the system. There are few sensible effects displayed by it, when it perfectly agrees with the patient. It is slow and almost imperceptible in its operation, and, unlike stimulants, produces no sudden alteration in the pulse, or any of the functions of the animal economy. The febrile powers therefore, which it opposes, are only vinced by its preventing the recurrence of the paroxysms, and thus effecting a removal of the disease.

With a view to avail ourselves of every advantage, it has been the practice to exhibit the bark from the beginning to the close of the apyrexia, in quantities as large and as frequently repeated as the stomach will bear. The average dose is from one to two drachms repeated every one or two hours. — We now come to the consideration of the next division.

Secondly. — The nature of the symptoms, with the age and habits of the patient. With regard to the administration of the bark in the ordinary cases of intermittent fever, little need be said. The propriety of evacuating the stomach and bowels is now fully established; and, although doubted by some, yet general experience is decidedly in favour of the practice. There can be no

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doubt, that many cases may be effectually cured by the bark without any
preparatory evacuations whatever. This is more especially the case in
those instances which occur in spring or winter, in subjects who have
had the disease in the preceding autumn; and which may, therefore,
be considered as relapses from the former attacks. But in intermittents
occurring in summer and autumn, in miasmatic districts,
and where the biliary secretions are much deranged, emetics and pur-
gatives are strongly demanded; and every practitioner acknow-
ledges their usefulness. Besides other salutary effects which eva-
cuants produce on the general system, they remove the most ob-
stacles of the alimentary canal, especially of the stomach; and as
Dr Caldwell observes in a note to Colburn's first book) discharge
from that organ, all such adhesive matters as might intervene be-
tween the bark and its internal surface, thus procuring for that ar-
ticle a more immediate access to its villous coat, and thereby add-
ing to the efficacy of its action. In ordinary cases of intermittents,
nothing else is required preliminary to the reception of the bark.

However, cases frequently occur, which from the nature
of their symptoms, require additional measures before the bark

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can be administered with advantage. When the case is of an inflammatory character, venesection is one of our most prompt and efficient remedies. 'Bleeding,' observes Dr. Clark in his *Medical and Surgical Treatise*, "is an essential preliminary in some cases of intermittents, before using the bark. I have had many cases of this kind in my own practice. The tendency to inflammatory action is sometimes so great that the fever has not power to develop itself in its genuine character; the intermission is incomplete, attended with restlessness, and an irritated state of the pulse; the cold stage is not marked by strong rigors, but only by creeping and protracted chills, and the hot stage does not go off by a profuse and universal perspiration. In such cases the bark can seldom be employed with any decided advantage, unless it be preceded by venesection, and other evacuations. By one good bleeding and cathartic, in instances of this kind, the fever will commonly assume its genuine character; the rigors will be strong, the perspiration which concludes the hot stage, copious and general. The bark will now act beneficially, however ineffectually it may have been previously employed."

It has been recommended by some, to delay the use of the bark

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until the inflammatory state of the system had been overcome by the continuance of the disease. This, undoubtedly, would have a tendency to protract the case, and it perhaps often be attended with the worst consequences. We are only to delay it, until, by the appropriate measures, we have corrected that state of the system, which prohibited its earlier employment.

The general plan, in intermitting and remitting fevers, is not to give the bark, until a complete aggrava or remission of the symptoms has taken place. But should the case present a typhoid tendency, such restrictions will cease, and we are then to administer the medicine alone, or with articles, more cordial and stimulating, without delaying for a perfect solution of the paroxysm. Dr. Wilson, whom I have already quoted, remarks, "when the debility is great, the symptoms consequently alarming, as it would be apprehended if the fever again recurs, especially when the aggrava is short and imperfect, it is often advisable to begin to give the bark, about the end of the hot fit: for were it delayed until the remission takes place, it might be impossible to choose in a sufficient quantity before the succeeding paroxysm. And if the

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patient be much reduced, and the symptoms become persistent, have made their appearance, the bark is proper after the pains have become so slight as to hardly be perceived.

Several cases of such a malignant character, were detailed by Dr. Parrish, whilst lecturing on fever. In these he commenced pouring in the febrifuge so soon as there was the slightest appearance of a remission, and continued it until the return of the paroxysm, when he gave from six to four grains of Opium, and thus, with appropriate auxiliaries, had the pleasure to see some of them recover.

It would even appear that vomiting and purging should not prevent our giving the bark in some cases. After speaking of the propriety of delaying the use of the bark in some cases, until after the operation of an emetic or cathartic, the author just mentioned observes, that "in urgent cases, and when there is no inflammatory action, the bark ought not to be delayed an hour on account of the state of the stomach and bowels. A strong & even appears from the observations of Dr. Jackson, Dr. Donalson, Moore and others, that actual vomiting and purging should not induce us to delay the exhibition of the bark

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when the state of the fever requires it. Long remarks by the
former of these authors, that the bark was often rejected by the
stomach, and in some cases passed off almost instantly by
stool, yet the course of the fever seemed to be no less effectively
checked by it, than when no such efforts did occur. In violent
cases Dr Donald & Menzies observed, when it was necessary to
give the bark before emetics and cathartics, could be administered,
Sydenham gave it along with a cathartic, and found that drying
up a cathartic, did not prevent the bark curing the ague.^{1, 2}

If spontaneous vomiting, and purging occur, in less violent
cases, the proper treatment is to promote these evacuations, by drinks,
until the prima viae are sufficiently freed from their irritating
contents; and then compose the system by opium, before we administer
the bark.

Intermittent fever is sometimes associated with visceral
obstructions, and here the bark has been held inadvisable by
some. If the objection be limited to those cases in which the diarrhoea
is considerably inflammatory, with pain in the obstructed
viscus, it is not unfounded; but as a general rule it cannot be admitted.

¹ Vide Wilson on febrile diseases.

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"The question has several times occurred to me," says Dr. Cullen, "in the case of persons, who, having frequently laboured under intermittents, had tumours and indurations remaining in the hypochondria, and had, when in that condition, a portion of the intermittent fever. In such cases I have freely employed the bark, and never found it to increase the affection of the liver and spleen: and in other such cases I have constantly found, that the avoiding the bark, and admitting, therefore, the repetition of the paroxysms, brought on disorders which often proved fatal."

The age and habit materially influence our practice in the use of the bark. Patients that are young and of robust habit will bear evacuations, much more freely, and require a less quantity of bark to effect a cure, than the more infirm and aged. But if the patient be old, or reduced by previous disorders, or if his constitution be impaired by intemperance or any other cause, evacuations must be employed with much circumspection. To pursue a greater cathartic or emetic, will generally be sufficient, and then not much time is to be lost before we administer the bark, which must sometimes be aided by the more diffusible stimuli. Cases of this

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description were detailed by Dr Parrish, in his lectures on fever. The subject of one of these, who was a boy, had just recovered from an attack of dysentery, before he took the fever; and although the case appeared mild at first, he rapidly sunk into a typhoid state, requiring the most active and stimulating treatment:— he recovered from this attack, but in the spring had another, and the back, even 808, soon resumed its course, yet the prostration was again considerable. In the succeeding autumn he had another relapse, but now only a little rhubarb was given, and this was immediately followed by the back, serpentaria, without any other preparatory medicines. Thus, by the early use of the medicine, he was prevented, in this attack, from sinking into that low stage which characterized the two former attacks.

Thirdly. The climate, season of the year, and nature of the epidemic. — In cold climates, dysentery is more generally associated with inflammatory symptoms, and of this nature the one under consideration also partakes. The debilitating plan is more required, previously to the use of the back, and as debility is not so much to be apprehended, it can be

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carried, with safety, to a greater extent. But in warm and sultry climates, exactly the reverse is said to be the case. The fevers of these climates run their course very rapidly, and a change from a state of increased excitement to that of debility, is often very sudden. Evacuations, it appears, although they may seem necessary at the beginning of the attack, often prove fatal by increasing the subsequent debility. On this account, writers on hot climates, insist on the necessity of having recourse to the bark at an early period.

Intermittents occurring in spring and winter, it is generally allowed, admit of longer delay in the exhibition of the bark, than those prevailing in the summer and autumn. It is especially, in the case of venereal intermittents, that the phlogistic diathesis occurs, says P. Cullen; and therefore, that upon this and other considerations, the exhibition of the bark in them may be more safely delayed; but even in these it may often be exhibited very early."

The common order of treatment is sometimes materially influenced by the nature of the epidemic. This was strikingly evident in the intermittents and remittents prevailing during the last season in this city and its vicinity. It was not uncommon to

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in them taking on the character of dysentery, and sometimes alternately exchanging in their progress. Some yards it is peculiar for determinations to the head, or lungs &c. producing all the symptoms of inflammation of these organs; and until they are relieved, the use of the bark is prohibited. However, the lowest affection just mentioned, did not so much interfere with the employment of the bark as we might, a priori, suppose; for Swietenius some cases when it was given with little regard to the dysenteric complaint. This was especially the practice when the case presented a typhoid tendency.

Fourthly. — The form of administering the bark, as has often been observed, almost the only species now employed in this country, are the pale, the red and the yellow. According to chemical analysis, the red is superior to either of the two other species, and I believe practitioners generally, acquiesce in the correctness of this statement. Bark is prescribed in a variety of forms. Besides the substance, it is given in extract, tincture, decoction and infusion; but when the stomach will bear the substance, we ought not to have recourse to the

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the mentioned forms. However, in some cases, from the irritability, and the nausea which it excites, the powder can not be retained; and under such circumstances, some of the other preparations are substituted with advantage. But of all the different preparations, none perhaps is better adapted, or more efficacious, than the sulphate of quinine. It was first used in the Parisian hospitals, in obstinate intermittents, in doses of two grains, morning and evening; and it is stated, with great success. To Farr & Kenney the credit is due of having first prepared it in this City, or perhaps, the Country. Since then it has acquired much celebrity, and its employment has been attended with signal success. Besides the promptness in curing a guest, the facility with which it is administered is a great recommendation. This preparation, being almost devoid of taste, and minute in its dose, will often be taken when every other form would be rejected or refused. On that account it seems to be particularly adapted to children and other delicate persons, tho' its employment is by no means confined to these. Eight grains are considered equivalent to an ounce

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of genuine bark. It is exhibited in the shape of pills, or suspended in a solution of gum arabic, with a little sugar.

In the administration of the bark in substance, it will not be amiss to say a few words on the different vehicles which are employed. It is not infrequently given in simple water, or coffee &c; but, milk, from its concealing the taste of the bark, is preferable; and in common cases, or when we must avoid additional excitement, such articles are the best adopted. But if there be reduction of strength, the powder may be given in porter, or wine; and in patients accustomed to the use of ardent spirits, brandy is often the most appropriate vehicle. Some speak highly of lime water, as particularly increasing the power of the bark.

When the stomach is weak, aromatics and bitters are often advantageously combined with the bark. If it induces purging, we must have recourse to opiate and astringents; but if there is reason to suspect, that it is dependant on acidity, we combine it with some antacid. If on the other hand, it occasions costiveness, it is necessary to add some gentle laxative,

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and for this purpose rhubarb is particularly adapted.

The virtues of the bark are sometimes greatly improved by uniting with it other articles, particularly clove, creosote tartar, or the carbonate of potash, or soda. The proportion is about a drachm to the ounce. Sassafras is often beneficially combined with it, either in substance, or what is perhaps more common, in the form of an infusion.

When, from the resistance of children, or an acute irritability of the stomach, the bark can not be taken by the mouth, it has been recommended to inject it per anum, or apply it externally to the body:—for the latter, different means have been proposed. Its employment in this way, is stated to have been occasionally serviceable. Compared, however, with the exhibition of the bark internally, it must prove an inefficient substitute, and since the introduction of the sulphate of quinine into common practice, we will, perhaps, on but few occasions, have need to resort to these more feeble and inconvenient means.

